



Department of Energy

ROCKY FLATS FIELD OFFICE  
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MAY 23 2000

00-DOE-02569

Mr. Steven Gunderson  
Rocky Flats Cleanup Agreement Project Coordinator  
Colorado Department of Public Health and Environment  
4300 Cherry Creek Drive South  
Denver, Colorado 80246-1530

Dear Mr. Gunderson:

Enclosed please find our responses to the Colorado Department of Public Health and Environment comments on "The Status Report for Monitoring of Natural Attenuation at Individual Hazardous Substance Site 118.1, August 1999." We have incorporated your comments provided verbally to our staff on May 1, 2000, in a comment response sheet. Therefore, we will not revise the report but will submit the changes to the Administrative Record. This report summarized the sample results for the suite of analytes that were sampled in the first sampling round and determined whether the suite should be modified given the results obtained.

If you should have any questions related to these responses, please contact Norma I. Castaneda at (303) 966-4226 or contact me at (303) 966-5198.

Joseph A. Legare  
Assistant Manager  
for Environment and Infrastructure

Enclosure

cc w/Enc.:

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G. Kleeman, EPA  
Administrative Record

cc w/o Enc.:

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ADMIN RECORD

1118.1-A-00029

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**RESPONSE TO CDPHE COMMENTS ON "THE STATUS REPORT FOR MONITORING OF NATURAL ATTENUATION AT IHSS 118.1"**

**Comment 1:**

*Section 2.2 suggests sampling only DOC instead of both DOC and TOC. TOC is the standard analyte for natural attenuation monitoring, not DOC.*

**Response:**

CDPHE is correct. A typographical error incorrectly identified Dissolved Organic Carbon as the analyte of interest. Total Organic Carbon will be collected in the future.

**Comment 2:**

*We are concerned that the plume outside the source is not contained or degrading. Recent investigations of the Industrial Area Plume showed carbon tetrachloride migration to the west and north in addition to the east and north part of the plume. Due to the complexity of the groundwater flow system in the sub-surface infrastructure of the plant it is possible not all the pathways of this plume have been identified.*

**Response 2:**

The north Industrial Area VOC plume investigation has identified the probable migration of carbon tetrachloride from IHSS 118.1 to the west. Migration of the carbon tetrachloride plume to the north appears to be very limited. Though well P219189 does contain carbon tetrachloride in quantities above the groundwater action level, the temporary wells installed to the north of this well do not show detections for carbon tetrachloride. It is possible that carbon tetrachloride has migrated from IHSS 118.1 to the east and northeast, and may be contributing to the high concentrations of VOCs near the westernmost solar pond. An Integrated Monitoring Plan (IMP) groundwater evaluation will delineate the northeastern extent of the carbon tetrachloride plume and establish whether a pathway exists from IHSS 118.1 to the solar pond area.

**Comment 3:**

*Based on the degradation rate information we suggest the site investigate the possibility of enhanced bioremediation. It is possible this relatively new technology could be used to degrade this chlorinated hydrocarbon source in a short period of time by injecting food grade compounds into the source. The technology is typically used in aquifer situations and may need to be adapted to the low flow environment in the 118.1 pit. We think there would be cost savings and other advantages to degrading this source and /or plume in-situ. Once the first two chlorine atoms are removed the resulting degradation products are more biodegradable in the typical oxygenated aquifer conditions found at RFETS. The remaining compounds might be naturally attenuated in a reasonable amount of time and distance.*

**Response 3:**

The Site has performed a cursory review of the feasibility of in-situ biodegradation of the IHSS 118.1 source. The plume itself is essentially pure carbon tetrachloride and therefore could be detrimental as a food source for maintenance of a healthy microbiota population. Another complicating factor for in-situ biodegradation is the low permeability of the subsurface materials through which the injected fluids must be forced in order to react and biodegrade the carbon tetrachloride. The tank was excavated into claystone bedrock and backfilled with a mixture of excess clay bedrock fill and alluvial materials. Therefore, permeability is low in the area of the carbon tetrachloride plume. Man-made features such as the buried process waste tank nearby may also impede the effective migration of injected fluids through the source. We would be happy to discuss the potential of in-situ biodegradation or other in-situ remediation methods for the 118.1 plume with CDPHE at a later date, when remedial action is evaluated for the plume.

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